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ABSTRACT

In a forced-choice recognition task children's memory for some dimensions of pictured events was investigated. Seventy-two children (12 boys and 12 girls each in kindergarten, second, and fourth grades) were shown pictures of simple events. In four response conditions, distractors differed from stimulus pictures in (1) who the participants were, (2) which participants were paired, (3) what type of action was occurring, and (4) each participant's role. There was a highly reliable effect of conditions on recognition accuracy, but no effect of age or interaction of age with condition. All children remembered the participants, role and type of action, in that order. They did not consistently remember which participants had been paired. It was inferred that: (1) children used semantic information to organize these pictured events; (2) they seem to have had available in memory a set of participants, with information about role relation and action of each participant; (3) the ability to use role and action information for picture recognition apparently develops very early. (Author/MS)

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Children's Recognition of Some Dimensions of Pictured Events

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Until now children's picture recognition has been tested only for pictures of objects or persons in stationary arrangements. To our knowledge there have been no studies in which the pictures represent some action taking place between participants, or between participants and objects. Such pictures represent events. In the present study we wanted to know whether children could remember the participants in the event, the action taking place, and the role relation between the participants (that is, who was the agent, and who the recipient). We were interested in whether some of these dimensions were easier to remember than others, and whether there were age differences in the salience of these dimensions.

After a brief pretraining period, children were shown 16 black and white outline drawings (see Figure 1). Each drawing contained either two animals or two people, one either chasing or bumping into the other in the left to right direction. Thus, each participant in a picture was either the agent or recipient of the actions of chasing or bumping.

In a forced-choice procedure, each of the 16 pairs of response pictures consisted of one old (or correct) picture and one distractor (or incorrect picture). There were four types of distractors, each

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defining a response condition, with four response pairs in each condition. This slide shows examples of each condition, with a stimulus picture of a goat bumping into a pig. It shows how the distractors for each condition were constructed. (Obviously, on a given response trial the child saw a particular picture with only one distractor.)

The totally new condition was defined by a distractor in which the action and both participants were new (but within the same category, animal or human, as the stimulus). The totally new distractor here consists of a sheep chasing a cow. We expected children easily to recognize the correct picture in this condition, since it is most similar to many picture recognition studies in which the distractor contains completely new material. Children's recognition accuracy is very high in these studies.

The second condition, or recombination condition, consisted of a distractor in which both participants were old, but were incorrectly paired, with their role relation and action unchanged. Here, the recombination distractor consists of a goat bumping into a wolf. Both participants had been seen before, each in the same role relation and action, but paired with a different participant. We assumed that, if the children organized these pictures in memory as an event (that is, "a goat bumping into a pig"), or if they simply associated participants ("goat-pig"), they would easily remember which participants had been paired. If, however, they were encoding only one participant or individual participants together with their individual relations to an action, participant pairs would be difficult to remember.

The third condition, or role condition, was defined by a distractor in which participants and action were unchanged, but the role relation

was reversed, agent becoming recipient, and recipient, agent. In this example, the role distractor is pig bumping goat, instead of goat bumping pig. This condition was of particular interest to us, because of the apparent importance of role relationships in early child language. Moreover, current linguistic theories (such as those of Fillmore and Chafe) propose that all statements about events and objects can be described by cases involving only a few basic role relationships. We wondered whether some of these semantic relations might form the basis for the encoding of pictured events as well.

The fourth condition, the action condition, was defined by a distractor in which participants and role relation were unchanged, but the action was changed (from chasing to bumping, or vice versa). Here the goat is chasing, rather than bumping, the pig in the distractor. We felt that if children were encoding the pictures as events, rather simply as participants on a page, they should remember the action quite easily.

Our subjects were 72 children, 12 boys and 12 girls each in kindergarten, second and fourth grades. We briefly trained them to attend to the dimensions of the pictures we were interested in. They saw a small set of pictures, similar to the stimulus set. Children first described the pictures, and were probed until they mentioned participants, action and role. They were then shown four response pairs, each representing one condition, and had to both select the correct picture and then say why it was correct and the alternative incorrect. Again children were probed until they said how the stimulus and distractor differed. During the experiment, children viewed the pictures at a self-determined rate, then saw the response pairs successively, and were asked simply to point to the picture which was

just like one of the ones they had seen in the first set.

Here is a graph (Figure 2) which shows the mean correct responses in percent by grade for each condition. Grouping over age, the order of mean accuracy was recombination, 56%, action, 69%, role, 75%, and totally new, 86%. The analysis of variance on accuracy scores revealed a highly reliable effect of condition on accuracy, with no main effect of age or sex. There were no interactions. Except for the difference between the action and role conditions, all pairwise comparisons of these conditions were reliable. To summarize these results, children of all age groups tested (5 to 10 year olds) had the same overall recognition accuracy, as well as the same order of mean accuracy by condition.

This study has demonstrated quite clearly that children do remember some dimensions of pictured events better than others. Apparently the salience of these dimensions does not change with age, given the ages tested here. Children's performance in the totally new condition compared well with the results of other picture recognition studies, as we had expected. Performance in the next highest conditions, role and action, reflects the fact that children were remembering these meaningful elements of the pictured events. Apparently these are salient dimensions of pictured events for even young children. That role could be remembered so well implies an interesting parallel to findings on children's language. Perhaps there are some important commonalities in the structure of linguistic descriptions of events and of visual memory.

We were puzzled by children's apparent inability to remember the pairing of participants in a given picture (see recombination distractor in figure). Their poor performance in this condition is evidence that the

children didn't use a simple associative strategy (pig-goat). If they had, accuracy in this condition would have been high, probably higher than that in the role and action conditions. It is possible that, with this set of pictures, this dimension is one which has very low salience and/or comes at the end of a serial processing sequence which deals with all of the other dimensions first.

We infer from the relative difficulty of the four conditions that children did not remember these pictures as whole events, although they did remember meaningful aspects of the events. They remembered the set of participants and, not quite as well, the action and role relations of individual participants. They did not remember which participants had been paired in a given picture. Apparently the capacity to recognize these dimensions of pictured events develops quite early, possibly before children enter school.

STIMULUS PICTURE

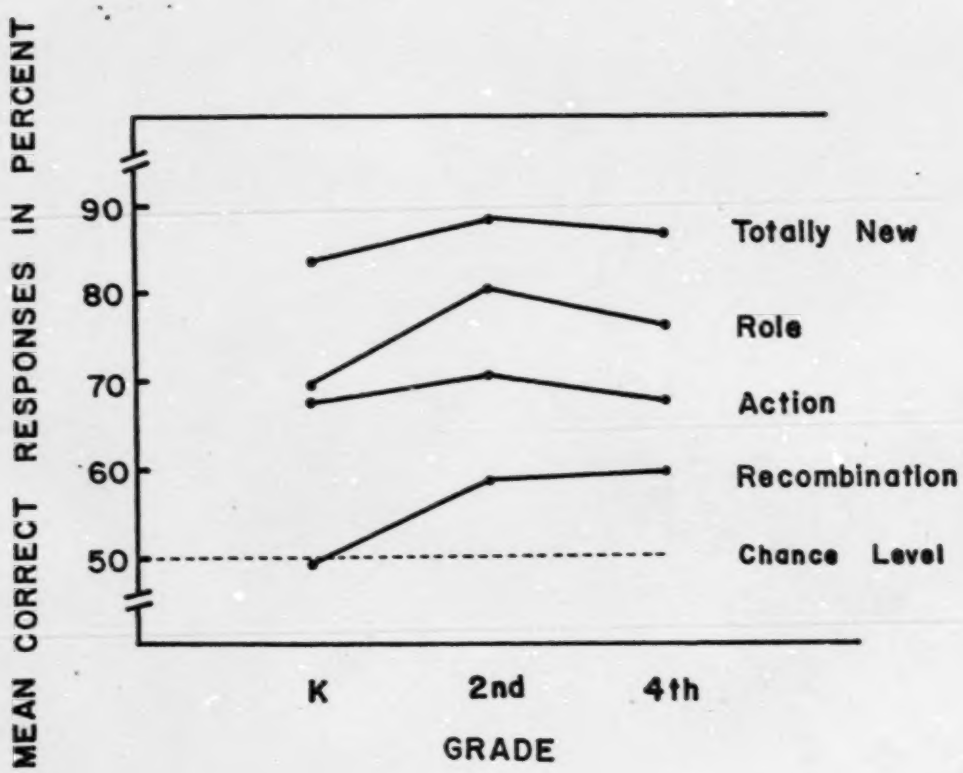
DISTRACTORS

Totally New

Recombination

Role

Action


MEAN CORRECT RESPONSES IN PERCENT
90
80
70
60
50
Totally New
Role
Action
Recombination
Chance Level
K
2nd
4th
GRADE